a system controller in electrical communication with each of said plurality of said beam controllers,

wherein each beam controller controls at least one of the phase, amplitude and polarization of a respective one of said plurality of coherent electromagnetic beams in response to control signals from said system controller, and

wherein [a] said spatially non-periodic pattern is formed within said region of overlap by the interference of said plurality of coherent electromagnetic beams in response to said control signals from said system controller.

DKS

2. A (AMENDED) The system of claim 1 further comprising a source controller in electrical communication with said system controller and said source of coherent electromagnetic radiation wherein said source controller controls the amplitude of each of said plurality of coherent electromagnetic beams as a function of time in response to said control signals from said system controller.

DKS

3. A (AMENDED) The system of claim 1 wherein said source of coherent electromagnetic radiation comprises:

a laser producing a[n] coherent electromagnetic beam; and

a beam splitter device positioned to receive said coherent electromagnetic beam and produce said plurality of coherent electromagnetic beams therefrom.

DKS

4. A (AMENDED) The system of claim 1 wherein one of said beam controllers comprises an acousto-optic [diffractive] device.

DMS

7. ^ (AMENDED) The system of claim 1 further comprising an apodizing element for at least one of said plurality of coherent electromagnetic beams wherein said apodizing element limits a spatial extent of the at least one coherent electromagnetic beam.

a2

DMS

9. ^ (AMENDED) The system of claim 8 wherein said receiver comprises a photosensitive [chemical receiver] surface.

a3

DMS

11. ^ (AMENDED) A method for producing a spatially non-periodic pattern [in a region of overlap] comprising the steps of:

providing a plurality of coherent electromagnetic beams;

directing said plurality of coherent electromagnetic beams into [said] a region of overlap defined by an intersection of all of said plurality coherent electromagnetic beams; and

a4

modulating at least one of the phase, amplitude and polarization of at least one of said plurality of coherent electromagnetic beams to thereby form [a] said spatially non-periodic pattern in said region of overlap by the interference of said plurality of coherent electromagnetic beams.

DMS

12. ^ (AMENDED) The method of claim 11 wherein the step of modulating at least one of the phase, amplitude and polarization of said at least one of said plurality of coherent electromagnetic beams comprises the steps of:

providing an acousto-optic [diffractive] modulator; and

modulating said coherent electromagnetic beam using said acousto-optic [diffractive] modulator.

13. ^ (AMENDED) The method of claim 11 wherein said step of providing said plurality of electromagnetic beams comprises the steps of:

providing a source of a[n] coherent electromagnetic beam; and

splitting said coherent electromagnetic beam into a plurality of coherent electromagnetic beams.

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19. ^ (AMENDED) An interferometric microlithography [synthetic aperture] system for producing a spatially non-periodic pattern [in a region of overlap] comprising:

a source of coherent electromagnetic radiation producing a[n] coherent electromagnetic beam;

a beam controller positioned to receive said coherent electromagnetic beam and generate a plurality of coherent output beams; and

a system controller in electrical communication with said beam controller,

wherein said beam controller controls at least one of the phase, amplitude and polarization of at least one of said coherent output beams in response to control signals from said system controller, and

wherein [a] said spatially non-periodic pattern is formed within said region of overlap by the interference of said plurality of coherent output beams in response to said control signals from said controller.

20. ^ (AMENDED) The [synthetic aperture] system of claim 19 wherein said beam controller further comprises a source controller in electrical communication with said source of coherent electromagnetic radiation, said source controller controlling the amplitude of said coherent